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(54) A mechanism for adjusting an armrest, seat, or window

(57) A mechanism for the adjustment of an armrest (3), comprises two swinging links (1 and 2) connected between the armrest and a slider (4) in the base (6). A longitudinal restraining link (8) is connected between base (6) and armrest (3) such that when the links (1 and 2) rotate the armrest may move in a vertical direction whilst movement in the fore-art direction is constrained and the orientation of the armrest remains the same. The mechanism may also be used for adjusting a seat or window.

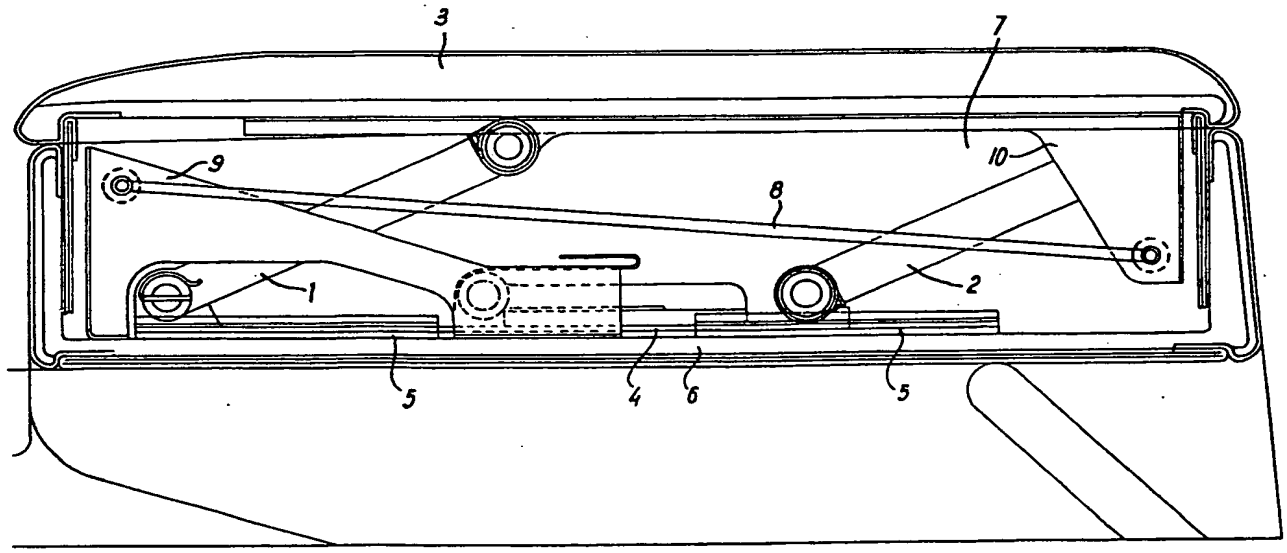

FIG 1

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The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

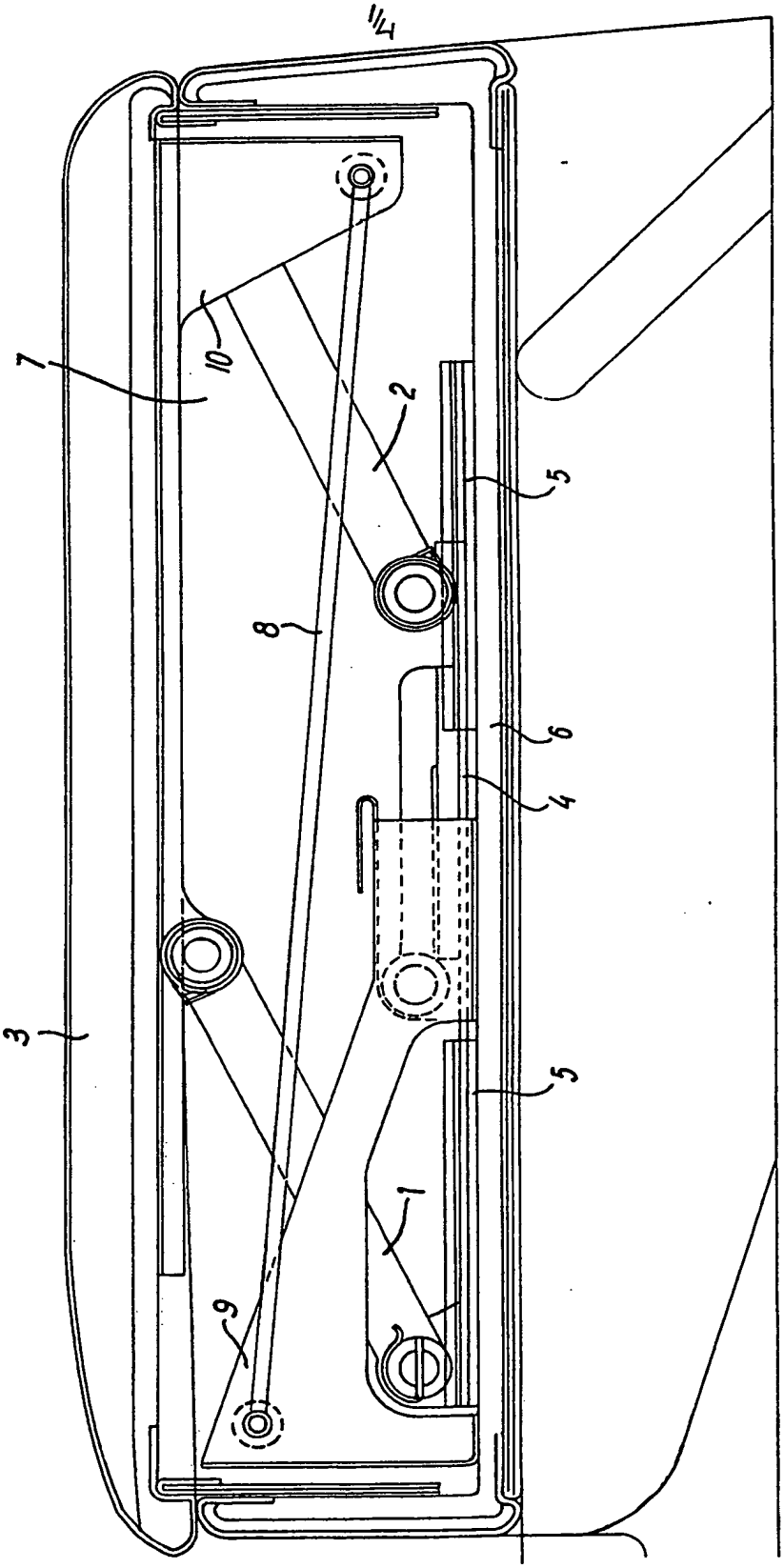


FIG.1

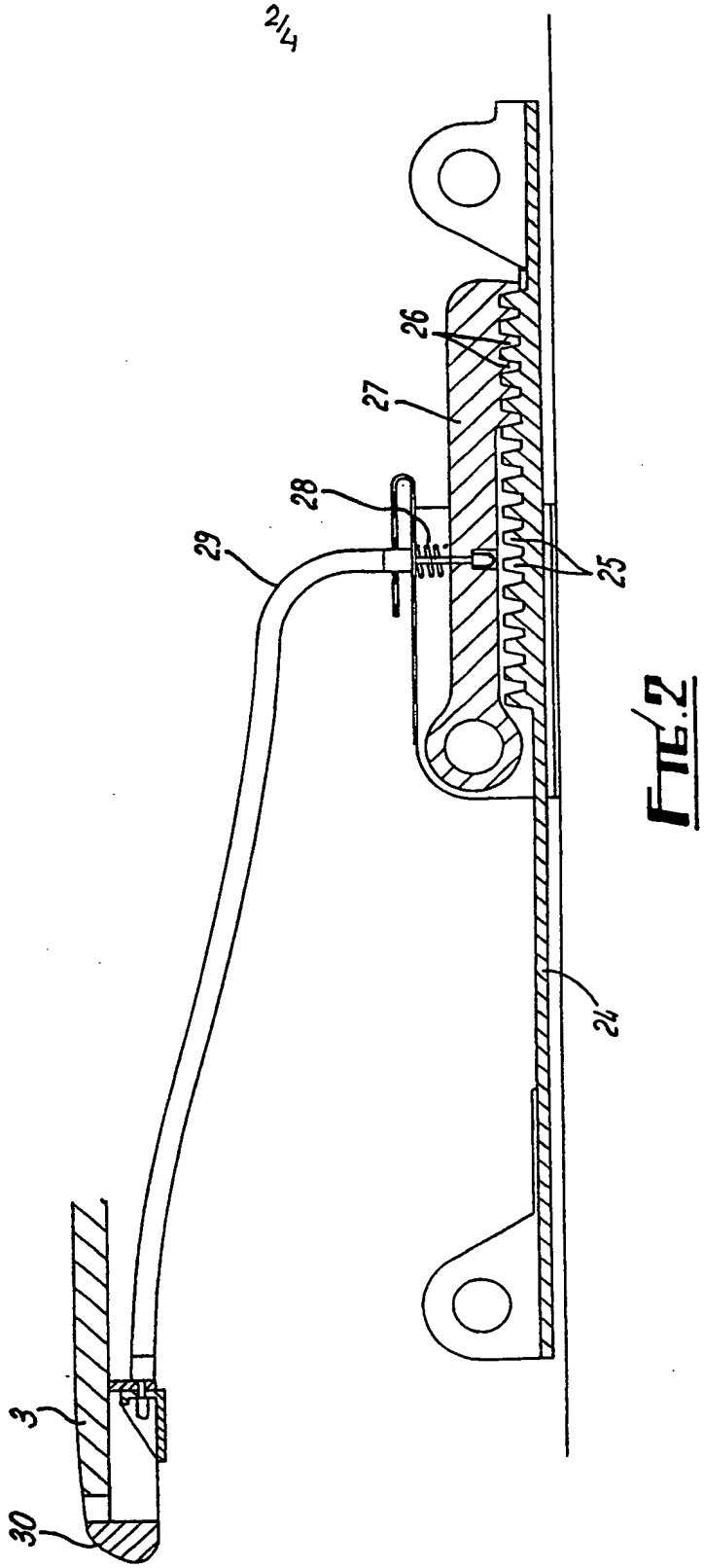
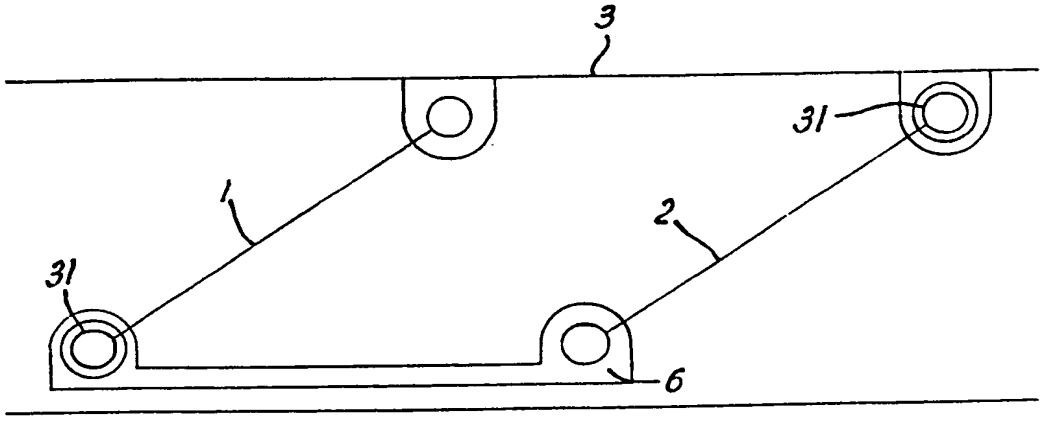
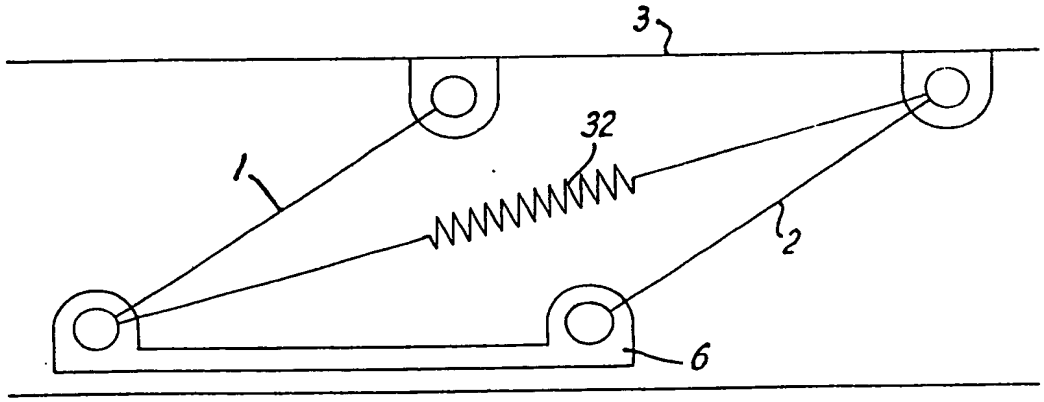


FIG.2



Фиг.3а



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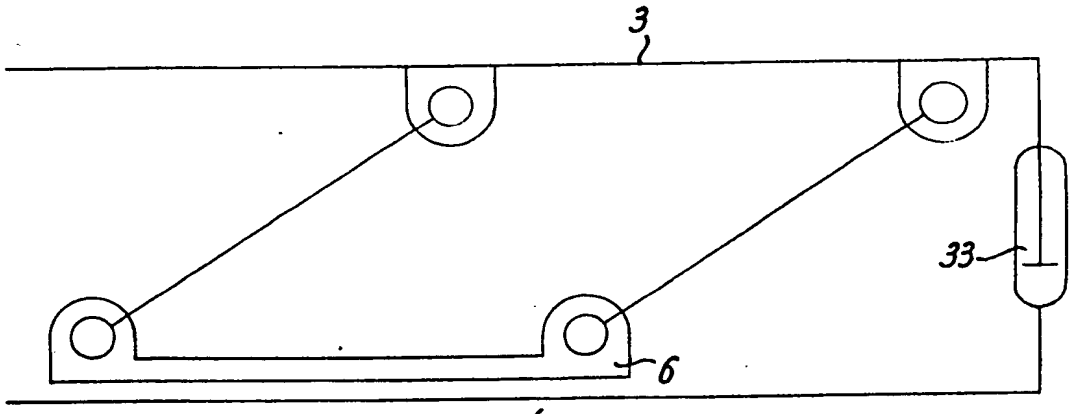

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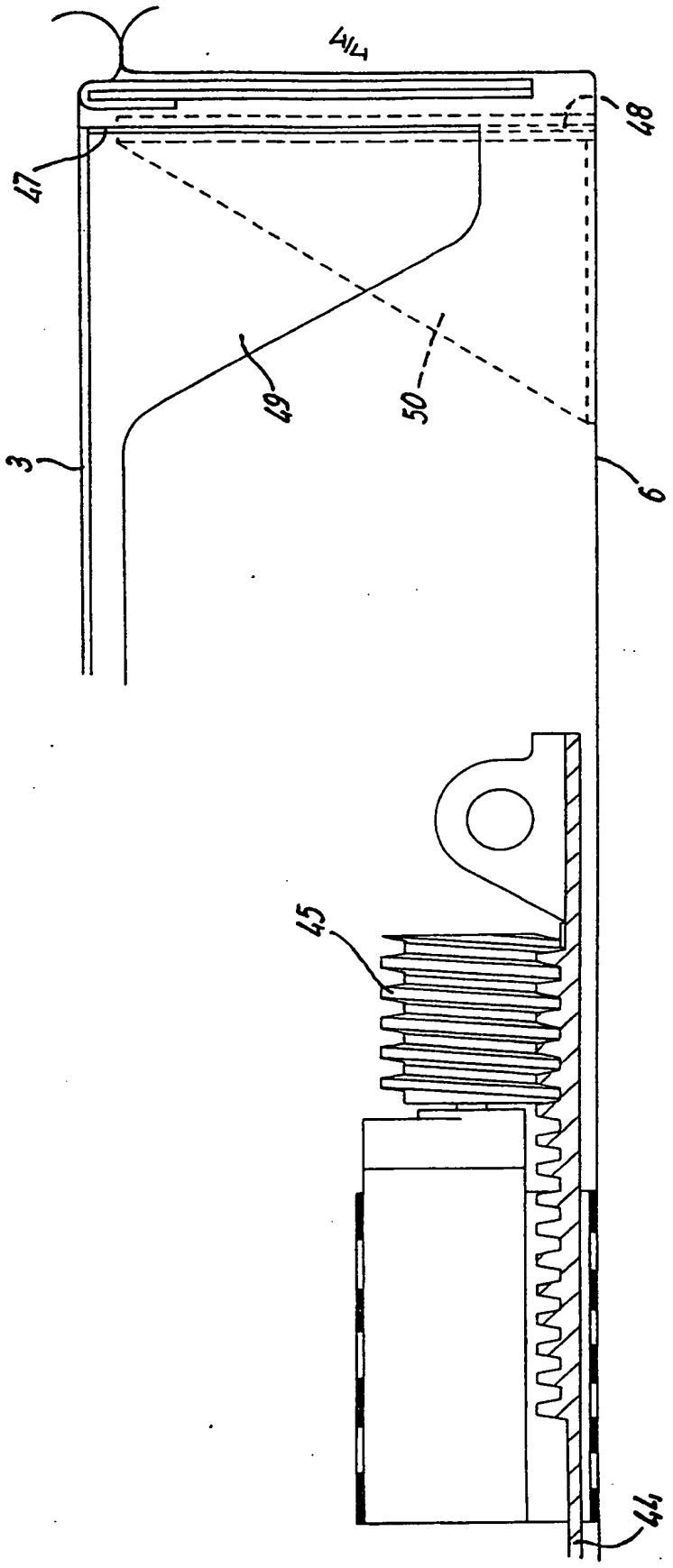

FIG.4

SPECIFICATION

A mechanism

The present invention relates to a mechanism for adjusting the height, for example, of an elemen.

The element may be an armrest, the height of which may be adjusted whilst its attitude is maintained horizontal. Other mechanisms are already available for achieving this end but these are complex or unreliable or both.

According to the present invention, there is provided a mechanism for the adjustment of the position of an element comprising a support, means for pivotally connecting the element to the support, the means being such that during relative pivotal movement between element and support relative translational movement is permitted between one end of the means for pivoting and the adjacent element or support and means for constraining relative translational movement of the element and support during the said relative pivotal movement.

The element may be an armrest, window or seat.

In a preferred embodiment of the invention as applied to an armrest, the means for pivotally connecting the armrest to the support comprises two links. These links are pivotally connected at one end to the armrest and, at the other end, to a slide which slides in the support or vice versa. The means for constraining the relative translational movement comprises a longitudinal link connected between the armrest and the base. Alternatively, a vertical slide in which the armrest slides may be provided. A slide may comprise a ratchet which provides means for locking the armrest in an adjusted position.

The mechanism may be motorised either through the links directly or via one of the slides. In the latter case the slide may comprise a rack in which a worm is driven. Where adjustment is manual the armrest and base may be constantly urged apart when the lock is released to facilitate adjustment simply by downward pressure on the rest.

In order that the invention may be more clearly understood, several embodiments thereof will be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic side elevational view of an armrest adjustment mechanism;

Figure 2 is a view of a modification of the arrangement of Figure 1,

Figures 3a-3c show three different ways of spring loading the armrest of Figure 1, and

Figure 4 shows further modifications of the arrangement of Figure 1.

Referring to Figure 1, the mechanism comprises two equal length swinging links 1 and 2, which are pivotally connected at their upper ends to an armrest 3, and, at their lower ends to a slider 4. The slider 4 runs in slides 5 formed on or connected to the base 6 of the armrest. This base also forms a housing 7 in which the mechanism is housed. A constraining longitudinal link 8 is povotally connected at one end to an extension 9 of the base 6 and, at the other end, to an extension 10 of the armrest.

In operation, when the height of the armrest is adjusted by lifting it off the base 6, the swinging links 1 and 2 rotate anticlockwise and the slider 4, to which they are pivotally connected at their lower ends, moves in the slides 5 from left to right in the fore/aft direction of the armrest. Because of this slide arrangement, movement of the armrest in the fore/aft direction is not constrained by the links 1 and 2. Instead this movement is constrained by the longitudinal link 8. As a result, as the height of the armrest is adjusted, its orientation remains the same. If, for example, it is horizontal, it remains horizontal irrespective of its adjusted height.

In order that the armrest may be held in an adjusted raised position, the slider 4 may be formed as a ratchet and a spring loaded locking lever provided to engage the ratchet. Such an arrangement is illustrated in Figure 2. Referring to this figure, the slider 24 is formed with ratchet teeth 25 with which the complementary teeth 26 of a locking lever 27 engage. The lever 27 is provided with a spring loaded de-activating arrangement comprising a compression spring 28 and a bowden cable 29. The spring 28 urges the lever into an operative position but can be released by pushing a button 30 on the armrest which lifts the lever 27 from the ratchet 24 through the bowden cable 29 against the spring force of the spring 28. The mechanism could be loaded such that the armrest would always tend to rise when the ratchet is released. This would aid adjustment as positioning of the armrest could be controlled by downward pressure on the rest from the user.

This loading could be achieved in three ways as shown respectively in Figures 3a to 3c. In Figure 3a torsion spring or springs 31 can be provided on any of the four parallel link pivots. In Figure 3b a tension spring 32 can be provided between two of the pivots. In Figure 3c a compresion spring or gas strut 33 can be provided between the base 6 and the armrest 3.

The ratchet arrangement of Figure 3 may be replaced by a motorised arrangement as shown in Figure 3. Here the ratchet is replaced by a rack 44 and the locking lever 27 by a motorised worm 45. The motorised worm serves not only to drive the armrest through the rack and connected links to the desired position, but also to lock the armrest in that position. Instead of motorising the mechanism by motorizing the slider any of the

four pivots of the two parallel links 1 and 2 may be motorized instead. Alternatively a motorized lift operating may be provided between the base 6 and the armrest 3 which is independent of the mechanism. Figure 3 also illustrates an alternative to the longitudinal link 8. This comprises a slider 47 which is constrained to slide in grooves 48. The slider 47 is connected to an extension 49 of the armrest and the grooves are formed in an extension 50 of the base 6.

Although the mechanism has been described in relation to the adjustment of an armrest, there are many other potential applications. It may, for example, be provided for a window lift or for the adjustement of a seat.

It will be appreciated that the above embodiments have been described by way of example only and that many variations are possible without departing from the scope of the invention. For example, the free links 1 and 2 could be directly pivotally connected to the base 6 and the slider mounted on the underside of the armrest. Further, if a change in attitude of the armrest were required on adjustment of height, the links 1 and 2 could be provided with unequal lengths.

CLAIMS

1. A mechanism for the adjustment of the position of an element comprising a support, means for pivotally connecting the element to the support, the means being such that during relative pivotal movement between element and support relative translational movement is permitted between one end of the means for pivoting and the adjacent element or support and means for constraining relative translational movement of the element and support during the said relative pivotal movement.

2. A mechanism as claimed in claim 1, in which the means for pivotally connecting the armrest to the support comprises two links.

3. A mechanism as claimed in claim 2, in which the two links are connected at one end to the element and, at the other end, to a slide which slides relative to the support and vice versa.

4. A mechanism as claimed in claim 1, 2 or 3, in which the means for constraining comprises a longitudinal link connected between the element and the support.

5. A mechanism as claimed in claim 1, 2 or 3, in which the means for constraining comprises a slide between the element and support.

6. A mechanism as claimed in claim 3, in which the slide comprises a ratchet which provides means for locking the element in an adjusted position.

7. A mechanism as claimed in any preceding claim comprising a motor drive.

8. A mechanism as claimed in claim 7, in which the motor drive is connected to operate directly on the means for pivotally connecting the element to the support.

9. A mechanism as claimed in claim 8, when appendant to claim 3, in which the slide comprises a rack in which a worm is driven.

10. A mechanism as claimed in claim 6, in which the element and support are constantly urged apart to facilitate adjustment once the locking means are released.

11. A mechanism as claimed in any preceding claim, in which the element is an armrest.

12. A mechanism as claimed in claims 1 to 10, in which the element is a window.

13. A mechanism as claimed in claims 1 to 10, in which the element is a seat.

14. A mechanism for the adjustment of the position of an element substantially as hereinbefore described with reference to Figures 1 and 3 or to these figures with the modification of Figure 2 or Figure 4 of the accompanying drawing.

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